

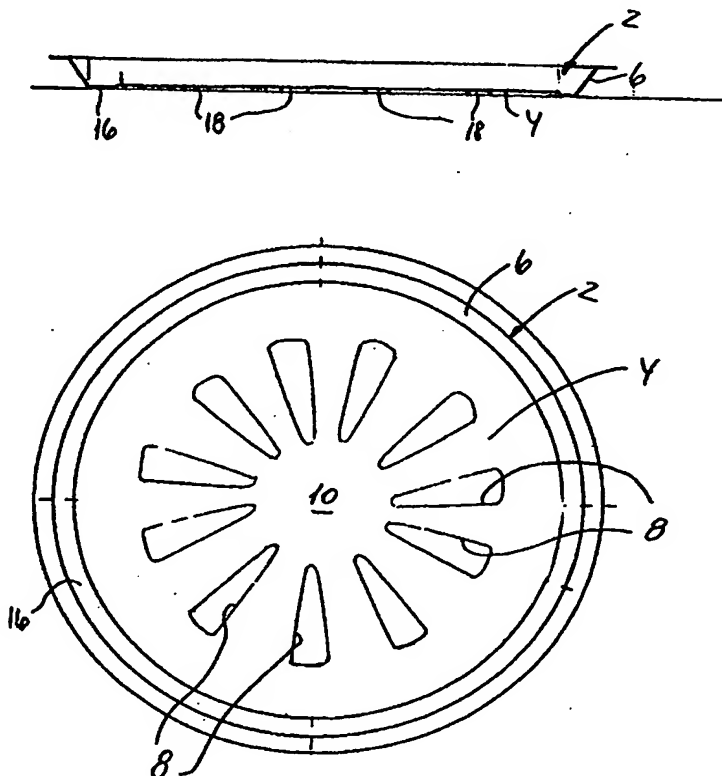
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : <b>B65D 81/34</b>	<b>A1</b>	(11) International Publication Number: <b>WO 00/35770</b> (43) International Publication Date: 22 June 2000 (22.06.00)
<p>(21) International Application Number: PCT/DK99/00487</p> <p>(22) International Filing Date: 15 September 1999 (15.09.99)</p> <p>(30) Priority Data: BA 1998 00450 2 December 1998 (02.12.98) DK</p> <p>(71) Applicant (for all designated States except US): TRYKKO PACK A/S [DK/DK]; Randersvej 40, DK-6700 Esbjerg (DK).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): PEDERSEN, Steen [DK/DK]; Strandpromenaden 25, DK-6710 Esbjerg V (DK).</p> <p>(74) Agent: PATRADE A/S; Aaboulevarden 21, DK-8000 Aarhus C (DK).</p>	<p>(81) Designated States: AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), DM, EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b> With international search report. In English translation (filed in Danish).</p>	

(54) Title: PACKING ARTICLE, PARTICULARLY FOR PRE-BAKED AND FROZEN DOUGH PRODUCTS

## (57) Abstract

There is described a packing item (2), especially for prebaked and/or frozen dough items, e.g. pizzas, calzones, and pies, which packing item (2) at the side facing the dough item is provided with a so-called susceptor coating, for example consisting of a polyester coated, patterned metallizing or metal coating where a bottom part (4) of the packing item (2) is designed with a number of ventilation openings (8) around a central area (10).



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Packing article, particularly for pre-baked and frozen dough products.

The present invention concerns a packing item, especially for overbaked (prebaked) and frozen dough items, and of the kind indicated in the preamble of claim 1.

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Packing items of this kind are known in many shapes and for many specific purposes. For use for overbaked and frozen dough items, e.g. pizzas, calzones and pies, intended for cooking in microwave ovens, there are known, for example tray or plate shaped packing items which preferably internally are provided with a special microwave reflecting, metallic coating. These specially coated packing items for use in microwave ovens are named "microwave susceptor articles" in the subject field. In order to avoid excessive heating and burning of the dough item there are further known "safety susceptors" where the microwave reflecting coating is not provided with said reflective coating at least in punctiform patterns or in part areas. It that connection it should be mentioned that the reflective coating only has the desired effect if the dough item is in contact with the reflective coating.

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Nevertheless, especially in central parts of e.g. pizzas, problems may arise with uneven baking or heating, i.e. that there may occur overheated and burned areas or zones which are wet and unbaked. Therefore, such wet, unbaked zones within the central area or overheated areas at the outer areas (edges) have only been avoided in practice by making relatively small pizzas.

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The invention has the purpose of indicating an improved packing item of the kind mentioned in the introduction, and by which the said drawbacks are remedied by means of simple measures.

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The packing item according to the invention is characterised in that the bottom of the packing item is designed with a number of ventilation openings around a central area. By means of simple measures, there is hereby achieved a new and improved packing item, where the said disadvantages with overheated or unbaked zones by corresponding, known packing items are remedied. In that connection it should be mentioned that

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the outer shape of the packing item according to the invention may be circular, oval, elliptical, quadratic, rectangular, or have another shape, according to wish and need.

5 Normally, the height of the packing item according to the invention for use for over-baked or frozen dough items like pizzas, calzones and pies be negligible or rather small, but e.g. for use for larger frozen dough items like white bread for baking in the microwave oven, the packing item may have greater height, why at least the lower part of the side walls with perforations (ventilation openings) of such a higher packing item may possibly also be designed in this way.

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The packing item according to the invention may, for example, may be further designed so that said ventilation openings are substantially triangular and have transverse dimensions increasing outwards.

15 Or the packing item according to the invention may be thus designed so that said ventilation openings consist of relatively small, circular holes arranged in concentric, annular zones, each with an increasing number of holes.

20 With the purpose of ensuring good access to the ventilation openings at the bottom, the packing item according to the invention may thus be designed that its bottom surface in punctiform support zones has greater thickness or depth so that the greater part of the bottom of the packing item including said central area may be lifted free of a support surface.

25 For adjusting in a simple way the effect of the susceptor coating as well as the effect of said ventilation openings and for covering the dough item, it may furthermore be an advantage that the packing item according to the invention is thus designed so that said ventilation openings at the bottom side of the packing item is covered by means of one or more detachable labels which at the side facing upwards toward the under-  
30 side of the plate or tray are, for example, provided with a susceptor coating, as the primary function of the said labels is covering the dough item downward so that the

packing item only has to be provided with an e.g. transparent lid as proper sales packing.

5 Suitably, the packing item according to the invention is further thus designed so that the item along the periphery or the outer edge has an annular, narrow zone with greater thickness or depth, i.e. so that the greater part of the bottom of the packing item including said central area is situated at a slightly higher level than said annular zone. This zone may advantageously be further designed with radial ventilation grooves so that an optimum connection to the ventilation openings at the bottom of the  
10 packing item is ensured.

A packing item according to the invention and designed as a circular packing item for a pizza or similar dough item, which packing item is arranged to be divided into a number of packing items by means of radial perforations, and that in a circular central  
15 area it is provided with downward bent edge parts arranged to constitute "feet" for pointed ends of the divided packing items.

A packing item according to the invention and designed as a circular packing item for a pizza or a similar dough item, which packing item is made of a packing item which  
20 in the plane state has a wavy outer edge, and which in the upward bent state has feet downward along its periphery, the feet formed by wave crests of said outer edge, and has radial ventilation openings formed by vales of said outer edge.

A packing item according to the invention and designed as a circular packing item for  
25 a pizza or similar dough item, which packing item is designed with an outer annular support surface, and that its support or bottom surface is thus designed and located so that there is a distance of about 3 - 20 mm between the support or bottom surface and said support surface which is designed with radial ventilation openings.

30 The invention is explained in more detail in the following with reference to the drawing, on which:

- Fig. 1 shows a sectional view through an embodiment of a packing item according to the invention,
- Fig. 2 shows a plane elevation of an embodiment of a packing item according to the invention,
- 5 Fig. 3 shows a plane elevation of a second embodiment of a packing item according to the invention,
- Fig. 4 shows a plane elevation of a third embodiment of a packing item according to the invention,
- Fig. 5 shows a plane elevation of a packing item according to the invention on which different kinds of ventilation opening are illustrated,
- 10 Fig. 6 shows a plane elevation of a fourth embodiment of a packing item according to the invention,
- Fig. 7 shows a sectional view through the packing item shown in Fig. 5 according to the invention,
- 15 Fig. 8 shows a sectional view through the packing item shown in Fig. 6 according to the invention,
- Fig. 9 shows a plane elevation of a fifth embodiment of a packing item according to the invention,
- Fig. 10 shows a sectional view through the packing item shown in Fig. 9 according to the invention, and
- 20 Fig. 11 shows a plane elevation for illustrating different ways of making ventilation openings in the bottom part of a packing item according to the invention.

The packing item 2 shown in Fig. 1 is made of cardboard, plastic or a suitable packing material (including e.g. a starch material) with a surface coating in the shape of a so-called susceptor coating e.g. consisting of a polyester coated, patterned metal coating, comprises a bottom part 4 and enclosing, sloping side walls 6 since the packing item 2 is intended for pizza or pie baked in a microwave oven. The bottom part 4 of the packing item 2 is, as shown in Fig. 2, outside a central area 10 designed with mainly triangular ventilation openings 8. Alternatively, the bottom part 4, as shown in Fig. 3, may be designed with a large number of lesser ventilation openings 12 outside the

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central area 10 arranged in concentric, annular zones. Or the bottom part may, as shown in Fig. 4, be designed with rather few larger, triangular ventilation openings 14.

As also seen in Fig. 1, the packing item 2 has an outer annular edge 16 with greater depth so that the bottom part 4 can be lifted free of a support surface. The annular edge 16 may preferably be designed in a way not shown with radial ventilation grooves 18 so that connection is made to the ventilation openings 8, 12 or 14.

Finally, it is to be noted that it will be within the scope of the invention also to provide the central area 10 of the bottom part 4 of the packing item 2 with a number of ventilation openings. Likewise, it will be a possibility that said support zones in the bottom surface are formed by downward bent edges of the ventilation openings (Fig. 11).

The bottom part 4 of a packing item 20 according to the invention may, as illustrated in Fig. 5, be provided with several different kinds of ventilation openings, namely triangular ventilation openings 8 with radially outward increasing width, groups of circular or elliptical ventilation openings 22 or a number of narrow concentric ventilation openings 24 along the marginal zone of the packing item as the central area 10 is kept free from ventilation openings. And as it further appears from Fig. 7, the packing item 20 is designed with radial ventilation openings 26 and feet 28, respectively, in an outer annular support zone.

The still plane packing item shown in Fig. 6 has a bottom surface 32 designed with a large number of radial ventilation openings 34 around a central area 10. The outer edge outline 36 of the packing item 30 has wavy shape so that the finished packing item 30, as shown in Fig. 8, thereby gets radial ventilation openings 38 between feet 40 formed by the "wave crests". Alternatively, the packing item 30 could be designed according to the same principle, but with a circular edge outline. In that case, the packing item 30 may be designed with radial ventilation openings 42 in the annular support skirt.

The packing item 44 shown in Figs. 9 and 10 is intended for a divisible pizza, i.e. for use in cases where only a part of a pizza is to be baked in a microwave oven. The packing item 44 has three radial perforations 46 which from outer edge incisions 48 extend inward to a specially designed central area 50. This is designed within a circular edge 52 with downward bent, sloping "feet" 51 which, when the packing item 44 including pizza has been divided, serve as support for the pointed end (Fig. 10) of the divided packing item 44 so that there is still achieved optimum ventilation under the divided packing item 44. It has appeared difficult to make the radial perforations 46 without these having tendency to break up before time. In that connection it has appeared to be advantageous to emboss radial bending lines 53 at first so that the material is stretched or pre-stressed, which appears to solve the problem of the perforations 46 breaking up before time.

Besides, in Fig. 10 is shown that the outer support edge of the packing item 44 also has radial ventilation openings 54 and feet 56, respectively. The packing item 44 is designed with radial ventilation openings in the bottom surface of the same kind as by the packing item 30, cf. Fig. 6, but as shown with stippled line, the packing item 44 may also be provided with circular ventilation openings or possibly be provided with a combination of the shown types of ventilation openings.

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Fig. 11 illustrates how the ventilation openings in the bottom part of the packing item may be designed in different ways, for example as common ventilation openings 8,34. At 58 is seen a ventilation opening formed by designing a cut shown as solid lines 60, after which the flap 61 formed thereby is swung downward about the bending line 62 so that the downward facing free edge of the flap 61 may serve as support for the bottom surface of the packing item. A similar principle is used at 63 where a T-shaped cutting is performed after which the two flaps formed thereby may be bent downwards and used as partial support feet for the bottom surface.

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By 64, 65 and 66 there are illustrated a corresponding principle where only a saw-tooth, wavy, or rectangular curve cutting is performed for forming two flaps which subsequently may be swung downwards about the punctuated bending lines. By using

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such irregular cutting lines there is achieved the further effect that the ventilation along the underside of the packing item takes place more diffusely, in contrast to forming relatively close radial ventilation ducts between the turn down flaps. In that connection, it may furthermore be an advantage that absorbing edge parts of the material of the packing item become exposed so that the material itself contributes to removing excessive humidity from e.g. a pizza. Such an absorbing effect from exposed material edges has of course an enhanced effect if the packing item, for example, is made of paper pulp provided with susceptor and surface coating.

Preferably, the packing item according to the invention is made of a material which at one side is provided with susceptor coating everywhere, but for application to some dough items, e.g. pies, it may be an advantage that upright, annular edge areas of the packing item do not have susceptor coating.

Furthermore, it should be emphasised that the packing item according to the invention makes possible to make completely packed raw dough items, e.g. pizza with filling, which immediately after production are packed in the packing item and frozen for storing as frozen goods. In the situation of use, the packing item with the pizza is just put directly into a microwave oven for baking for serving. In other words, it becomes possible to make pizzas with filling without having at disposal a production oven, something which in reality implies a remarkable simplification.

Finally it shall be mentioned that the principle of the invention - to design ventilation openings in the susceptor coated support surface of a packing - may be combined with known box packings for pizzas or other dough items where an outer side of the box is provided with a susceptor coating. The intention is to take the pizza out of the box and place it upon the susceptor coating of the box so that hereby good ventilation under the pizza is established. In order to further optimise the ventilation, the susceptor coating, the invention, may furthermore be provided with ventilation openings or designed with prepared perforated fields intended to be pressed out when the susceptor coating of the box is used as elevated baking underlay for a pizza or another dough item in a microwave oven.

Another possibility would be that a box packing for a pizza or other dough item inside the bottom surface is designed with a field provided with susceptor coating and which is prepared to be pressed out, as the intention is to press the susceptor field out so the an opening is created in the bottom of the box. This is then turned so that the bottom of the box with the opening faces upwards, after which the pressed out susceptor field, which, for example, may be triangular, is placed upon the opening in a turned condition, i.e. so that the susceptor field does not fall through openings which have the same shape. The susceptor field may furthermore be designed with advantage with a number of ventilation openings which e.g. may be formed by pressing out prepared, perforated openings.

## CLAIMS

1. A packing item, especially for overbaked (prebaked) and/or frozen dough items, e.g. pizzas, calzones, and pies, which packing item on the side facing the dough item is provided with a so-called susceptor coating, for example consisting of a polyester coated, patterned metal coating, c h a r a c t e r i s e d in that the bottom of the packing item is designed with a number of ventilation openings around a central area.

2. A packing item according to claim 1, c h a r a c t e r i s e d in that said ventilation openings are substantially triangular and have crosswise dimensions increasing outwards.

3. A packing item according to claim 1, c h a r a c t e r i s e d in that said ventilation openings consist of relatively small, circular holes arranged in concentric, annular zones, each with an increasing number of holes.

4. A packing item according to claim 1, c h a r a c t e r i s e d in that at the outer side of the packing item, said ventilation openings are covered by means of one or more detachable labels which at the side facing upwards toward the underside of the plate or tray are, for example, provided with a susceptor coating.

5. A packing item according to claim 1, c h a r a c t e r i s e d in that its bottom surface has a thickness or depth in punctiform zones so that the greater part of the bottom of the packing item including said central area may be lifted free of a support surface.

6. A packing item according to claim 1, c h a r a c t e r i s e d in that along the periphery or the outer edge it has an annular, narrow zone with larger thickness or depth, i.e. so that the greater part of the bottom of the packing item including said central area is situated at a slightly higher level than said annular zone.

7. A packing item according to claim 1 and 6, c h a r a c t e r i s e d in that said annular, outer zone is designed with radial ventilation grooves.

8. A packing item according to claim 1 and designed as a circular packing item for a pizza or similar dough item, characterised in that it is arranged to be divided into a number of packing items by means of radial perforations, and that in a circular central area it is provided with downward bent edge parts arranged to constitute "feet" for pointed ends of the divided packing items.
9. A packing item according to claim 1 and designed as a circular packing item for a pizza or a similar dough item, characterised in that it is made of a packing item which in the plane state has a wavy outer edge, and which in the upward bent state has feet downward along its periphery, the feet formed by wave crests of said outer edge, and has radial ventilation openings formed by vales of said outer edge.
10. A packing item according to claim 1 and designed as a circular packing item for a pizza or similar dough item, characterised in that it is designed with an outer annular support surface, and that its support or bottom surface is thus designed and located so that there is a distance of about 3 - 20 mm between the support or bottom surface and said support surface which is designed with radial ventilation openings.

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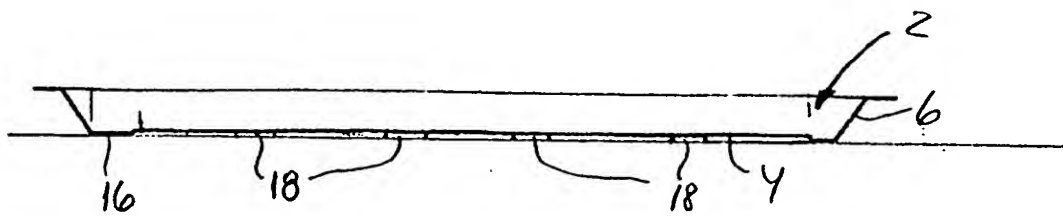


Fig. 1

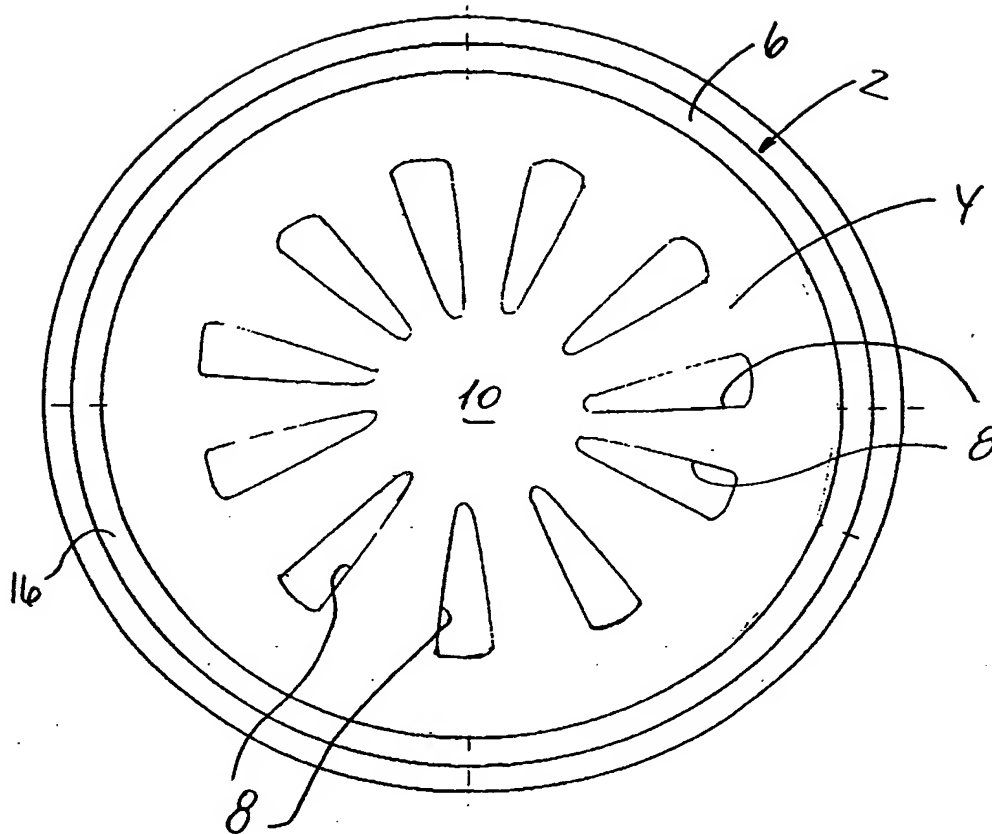


Fig. 2

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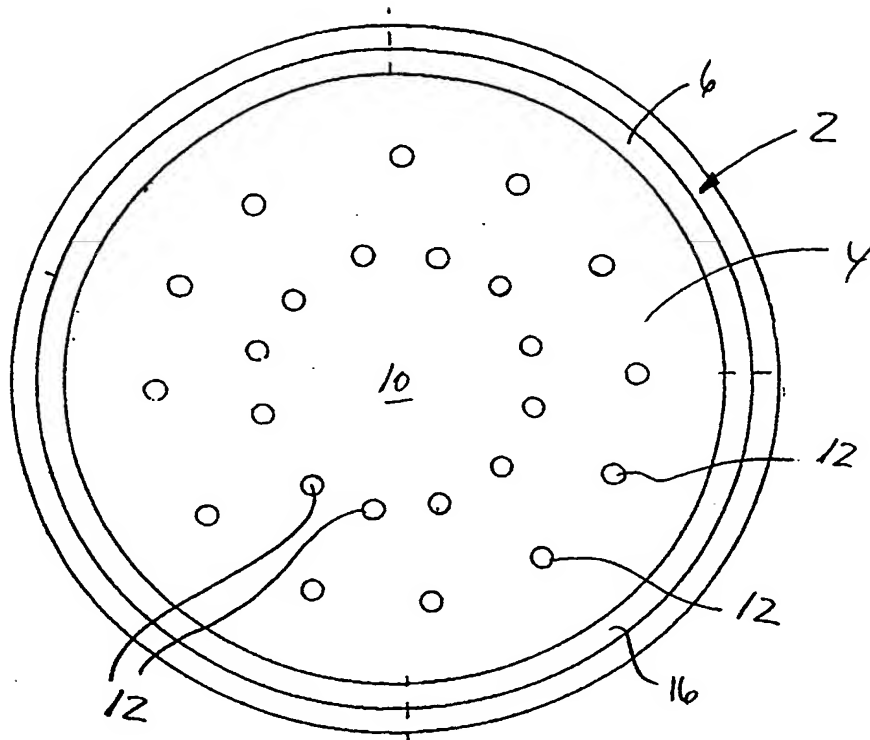


Fig. 3

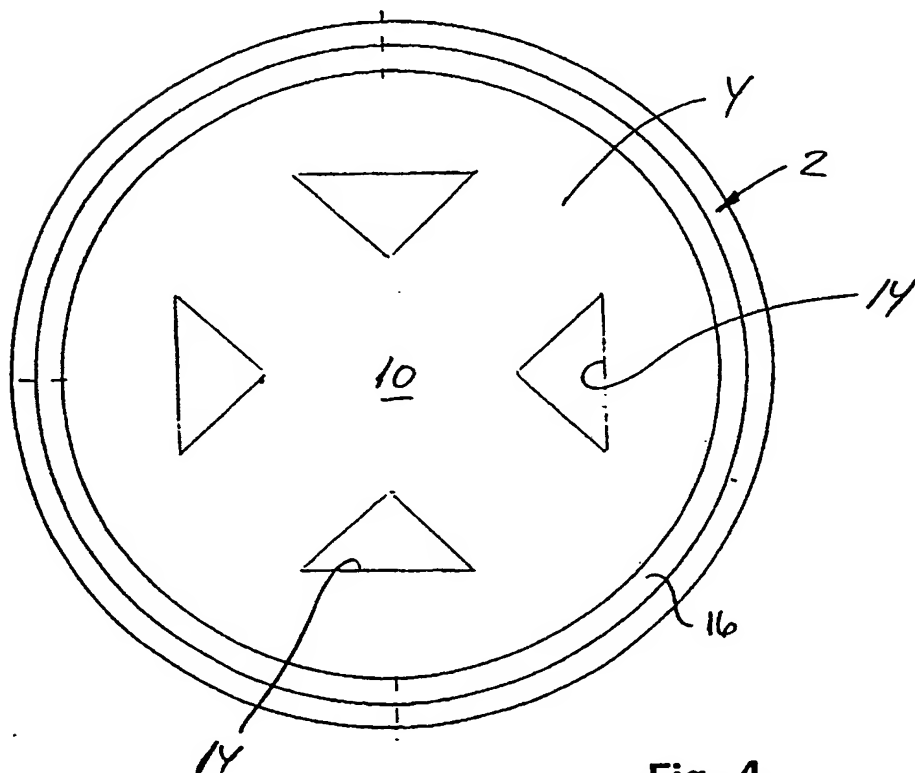


Fig. 4



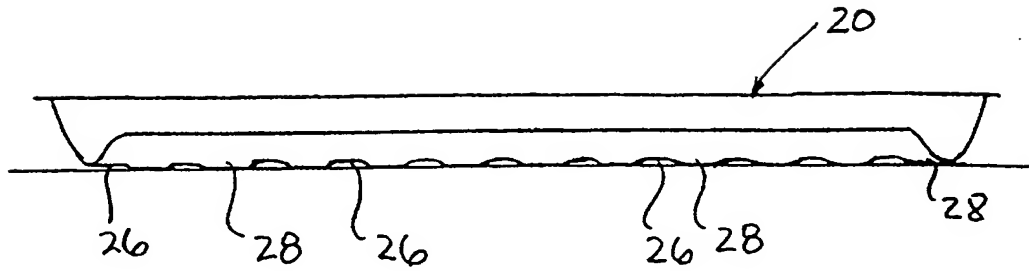


Fig. 7

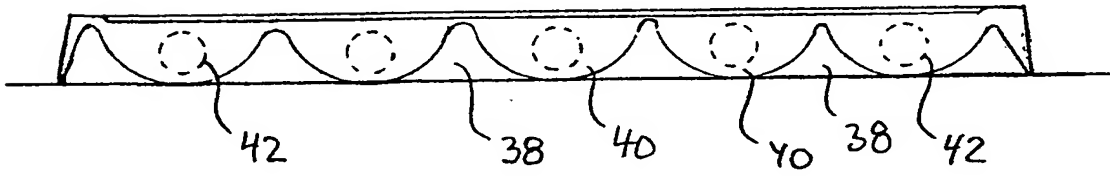


Fig. 8



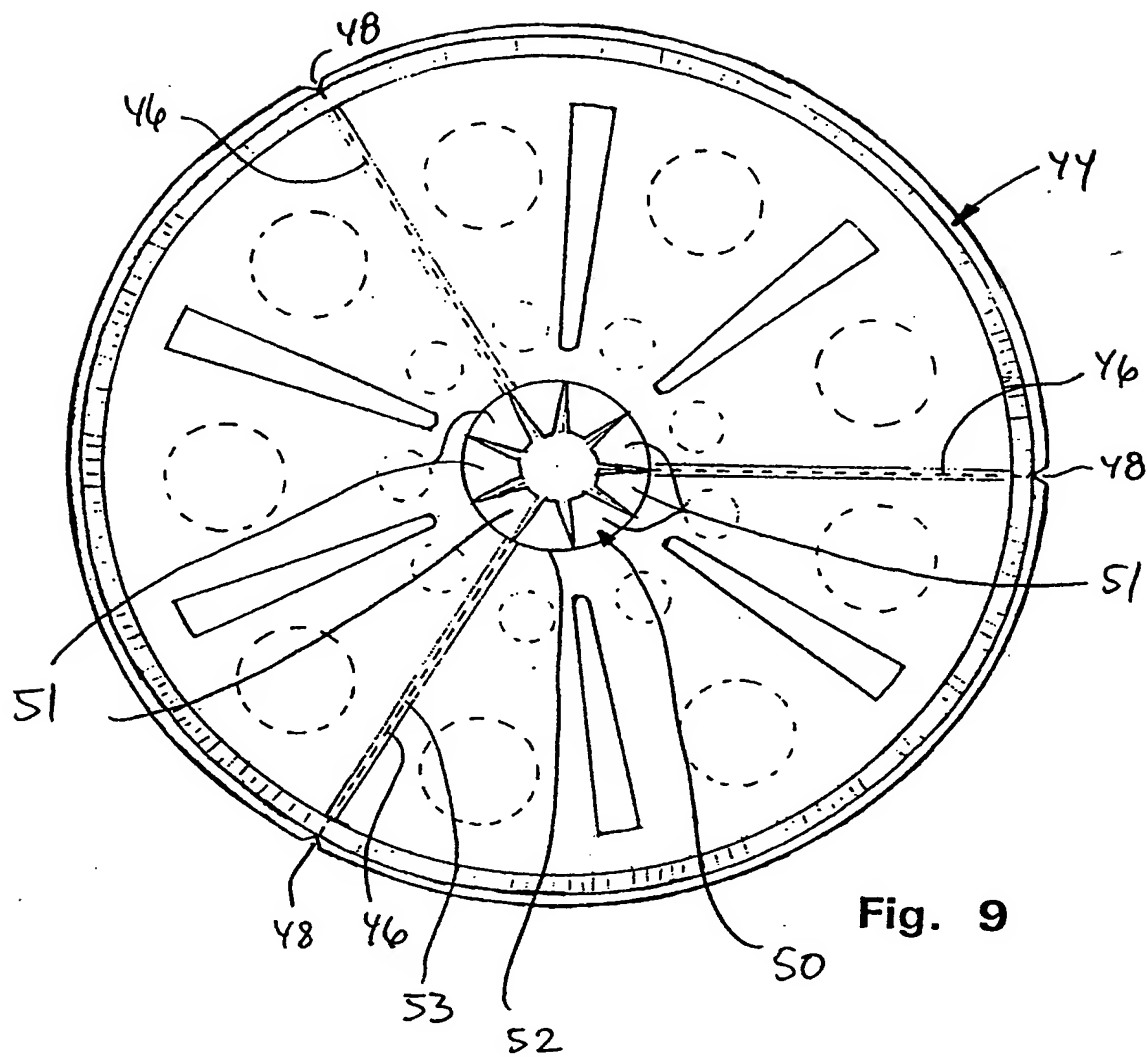


Fig. 9

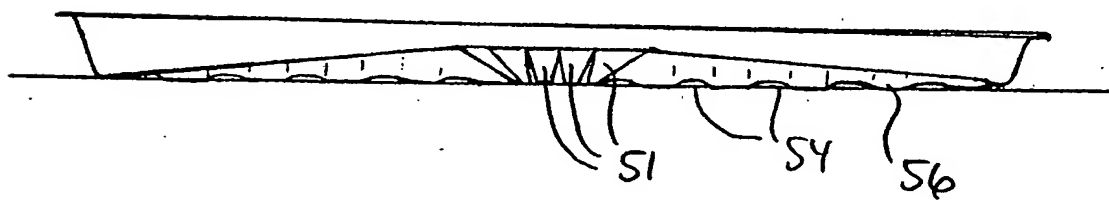


Fig. 10

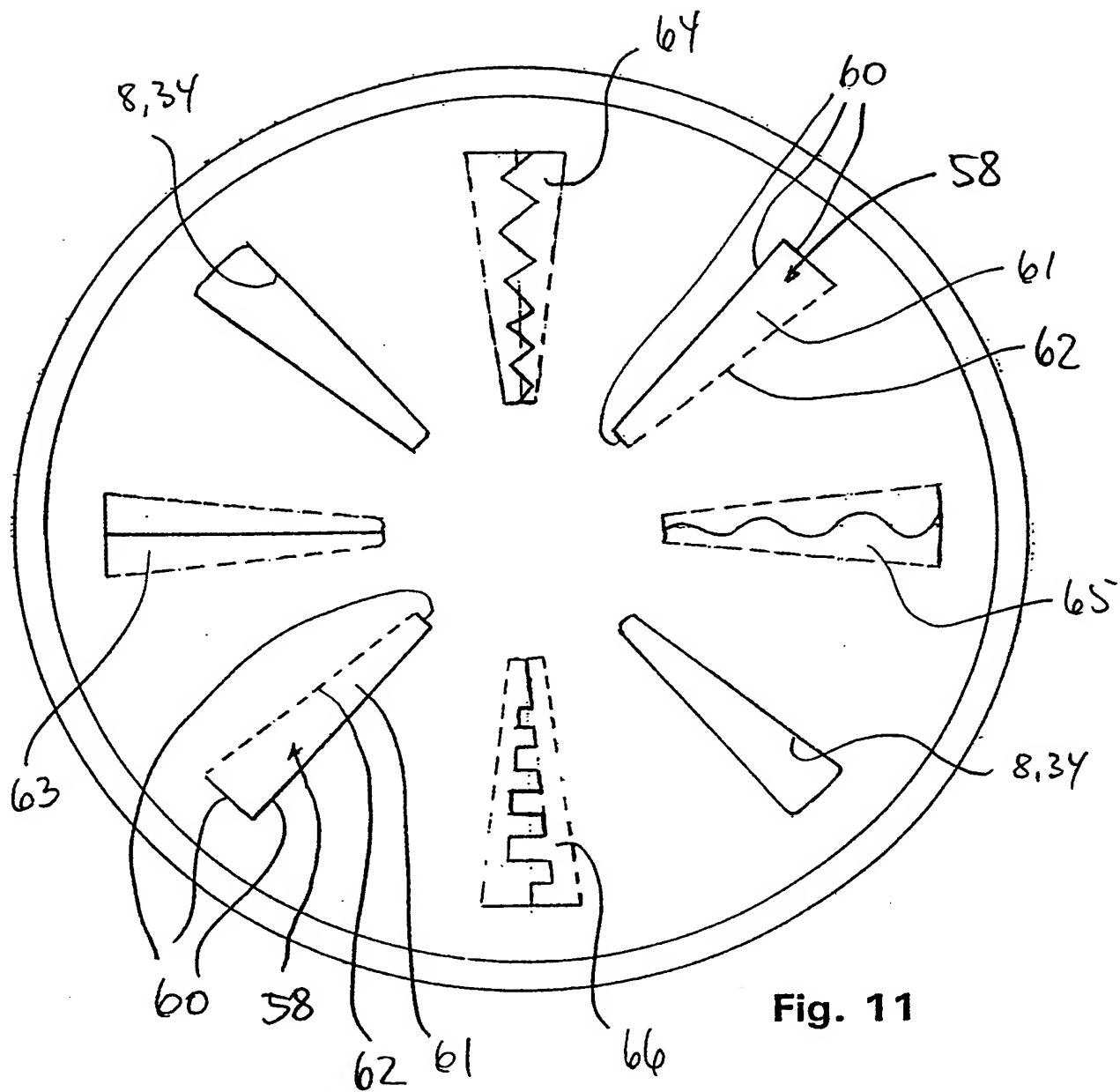


Fig. 11

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INTERNATIONAL SEARCH REPORT

International Application No.

PCT/DK 99/00487

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC7: B65D 81/34

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC7: B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9808752 A2 (BECKETT TECHNOLOGIES CORP.), 5 March 1998 (05.03.98), figure 10, claims 44,45, abstract --	1-10
X	US 4896009 A (T.D. PAWLOWSKI), 23 January 1990 (23.01.90), column 3, line 58 - column 4, line 52 --	1-10
X	WO 9219515 A1 (BECKETT INDUSTRIES INC.), 12 November 1992 (12.11.92), abstract --	1-10
A	US 5585027 A (R.C. YOUNG), 17 December 1996 (17.12.96), abstract --	8

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents	"I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document but published on or after the international filing date	"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

7 December 1999

Date of mailing of the international search report

07 -02- 2000

Name and mailing address of the ISA:

Swedish Patent Office  
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Facsimile No. +46 8 666 02 86

Authorized officer

Inger Löfgren / MR

Telephone No. +46 8 782 25 00

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 99/00487

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5391864 A (J. BODOR ET AL), 21 February 1995 (21.02.95), abstract  -----	1-10

# INTERNATIONAL SEARCH REPORT

International Application No.  
PCT/DK 99/00487

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

**The feature common to all of claims 1-10 is a substrate for a microwave package in which the bottom part comprises apertures.**

**However, the search has revealed that such a substrate is not novel. See WO9808752, (abstract), WO9219515, (abstract) and US4896009, (abstract). The documents disclose a substrate for a microwave package with apertures in the bottom part.**

.../...

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

Consequently the common feature is not a special technical feature within the meaning of PCT Rule 13.2, second sentence, since it makes no contribution over the prior art.

There is no other feature common to all the claims. Since there exists no other common feature which can be considered as a special technical feature within the meaning of PCT Rule 13.2, second sentence, no technical relationship within the meaning of PCT Rule 13 can be seen. Consequently it appears that, a posteriori, Claims 2, 3, 4, 5, 6-7, 8, 9 and 10 do not satisfy the requirement of unity of invention.

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

02/11/99

International Application No.  
PCT/DK 99/00487

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
WO	9808752	A2	05/03/98	AU	4006197 A	19/03/98
US	4896009	A	23/01/90	CA	1329794 A	24/05/94
				EP	0350847 A	17/01/90
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				CA	2046836 A	07/11/92
US	5585027	A	17/12/96	NONE		
US	5391864	A	21/02/95	AT	141231 T	15/08/96
				AU	649150 B	12/05/94
				AU	663446 B	05/10/95
				AU	1966792 A	21/01/93
				AU	6738294 A	08/09/94
				CA	2073939 A,C	17/01/93
				DE	69212751 D,T	02/01/97
				EP	0533219 A,B	24/03/93
				SE	0533219 T3	
				ES	2090484 T	16/10/96
				JP	2516532 B	24/07/96
				JP	6070843 A	15/03/94
				ZA	9205312 A	17/01/94

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